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**BIOCHEMICAL ASSESSEMENT OF THE CONTROL OF  
DIABETES AND LIPID PROFILE IN DIABETIC TYPE 2  
SUDANESE SUBJECTS**

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the degree of Master of Biochemistry

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## **Dedication**

To

My parents

For making everything worthwhile

My brothers and sisters

For giving me love and inspiration

My friends

For their support

## **Acknowledgment**

First of all, I would like to thank Prof. Khalid Eltom for supervising and guiding my work, and for his support throughout my dissertation. I very much appreciate his input and I am very grateful for always finding an open door.

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## **Abbreviations**

<b>Term</b>	<b>Abbreviation</b>
DM	Diabetes mellitus
IDF	International Diabetes Federation
CVD	cardiovascular disease
HbA1c	Glycated hemoglobin
TC	Total cholesterol
TG	Triglyceride
FPG	Fasting plasma glucose
ADA	American Diabetes Association
WHO	World Health Organization
T1D	Type 1 Diabetes Mellitus
T2D	Type 2 Diabetes Mellitus
IDDM	Insulin-dependent diabetes mellitus
NIDDM	non- insuline dépendent diabète mellites
MODY	Maturity onset diabetes of young
GDM	Gestational diabetes mellitus GDM
IGT	Impaired glucose tolerance

<b>Term</b>	<b>Abbreviation</b>
IFG	Impaired fasting glycaemia
CVD	Cardiovascular disease
MI	Myocardial infarction
DKA	Diabetic ketoacidosis
IFG	impaired fasting glucose
LDL	Low-density-lipoprotein
HDL	High-density-lipoprotein
TG	Triglycerides
PAD	peripheral artery disease
NCEP	National Cholesterol Education Program
BMI	Body Mass Index
Spss	Scientific Package For Social Science

## ABSTRACT

This study was carried out in Jabber Abu Elezz diabetics center in Khartoum, in Khartoum state, Sudan. as a case control study The objective to evaluate Fasting lipid profile: including total cholesterol and triglycerides. And to correlate relationship between cholesterol, triglyceride ,glycated hemoglobin( HbA1c) ,duration ,history and fasting glucose. in diabetic type 2 patients. Fifty nine type 2 diabetic patients with duration five years and above. Thirty-three patients of them were female , Twenty-six patients were males .

The mean of whole blood glycated hemoglobin (HbA1c) in diabetic patients type 2 male ( $9.26 \pm 2.7956$  )% . In diabetic patients type 2 female ( $8.60 \pm 2.08$  ) % . were significantly higher than the normal range (6.5-7)% of glycated hemoglobin . And the mean of Fasting Blood Glucose (FBG) ( $212.38 \pm 77.37$ ) mg/dl was significantly higher than female control ( $105.25 \pm 13.47$ ) mg/dl ( $P=0.000$ ) , and the mean of FBG ( $213.94 \pm 93.88$ ) mg/dl was significantly higher than that male control ( $103.42 \pm 12.93$ ) mg/dl. And the mean of cholesterol ( $160.27 \pm 43.1$ ) mg/dl, was significantly higher than that female control ( $108.44 \pm 25.67$ ) mg/dl ( $P=0.000$ ), and the mean of cholesterol ( $149.18 \pm 38.3$ ) mg/dl, was significantly higher than that male control ( $117.86 \pm 35.5$ ) mg/dl ( $P=0.020$ ) . And the mean of Triglyceride ( $91.73 \pm 37.55$ ) mg/dl, were no significant than that female control ( $84.19 \pm 12.07$ ) mg/dl, And the mean of Triglyceride ( $99.85 \pm 43$ ) mg/dl, were no significant than that male control ( $77.86 \pm 23.88$ ) mg/dl ( $P=0.158$ ). Although there were significance in cholesterol between diabetic and control both were found in normal range.

## المستخلص

يصف مرض السكري على المدى اضطراب التمثيل الغذائي من المسببات المرضية المتعددة التي تتميز بارتفاع السكر في الدم مع الاضطرابات في استقلاب الكربوهيدرات والدهون والبروتينات الناتجة عن عيوب في إفراز الأنسولين وعمل الأنسولين أو كليهما. و يعتبر مرضى السكري أكثر عرضة للإصابة بمشكلات صحية مختلفة مثل أمراض القلب والسكتة الدماغية وارتفاع مستويات الكوليسترول في الدم بنوعيه (البروتينات الدهنية منخفضة الكثافة البروتينات الدهنية مرتفعة الكثافة والدهون الثلاثية) .

أجريت هذه الدراسة في مركز جابر ابو العز التخصصي للسكري بولاية الخرطوم وان الهدف منها قياس الكوليسترول والدهون الثلاثية وربطهما بتنظيم السكر والعمر والمدة والفترة الزمنية والتاريخ المرضى في مرضى السكري النوع 2. و أجريت في تسعة وخمسون من المرضى الذين يعانون من داء السكري النوع الثاني ، تم اتخاذ مدة المرض خمس سنوات الى ستة عشر سنوات وسن المرضى بين 62-40 عاما وثلاثون من الأفراد كمجموعة تحكم .النتائج التي وجدت من هذه ان متوسط الهيموغلوبين الدم السكري  $9.26 \pm 2.79$  ,  $1.56 \pm 9.88$  % عند الرجال , عند النساء (  $2.08 \pm 8.60$  ) وكانت أعلى بكثير من المعدل الطبيعي (6.5-7) % من الهيموغلوبين السكرى . ومتوسط سكر الدم للنساء (  $77.37 \pm 212.38$  ) اعلى من مجموعة التحكم (  $P=0.000$  ) (  $13.47 \pm 105.25$  ) (mg/dl) . ومتوسط سكر الدم للرجال (  $93.88 \pm 213.94$  ) اعلى من مجموعة التحكم (  $P=0.000$  ) (mg/dl) (  $12.93 \pm 103.42$  ) متوسط الكوليسترول للنساء (  $43.1 \pm 160.27$  ) اعلى من مجموعة التحكم (  $P=0.000$  ) (mg/dl) (  $25.67 \pm 108.44$  ) . متوسط الكوليسترول للرجال (  $38.3 \pm 149.18$  ) اعلى من مجموعة التحكم (mg/dl) (  $P=0.02$  ) (  $35.5 \pm 117.86$  ) . متوسط الدهون الثلاثية للنساء (  $37.55 \pm 91.73$  ) اعلى من مجموعة التحكم (mg/dl) (  $37.55 \pm 91.73$  ) متوسط الدهون الثلاثية للرجال (  $43 \pm 99.85$  ) واعلى من مجموعة التحكم (  $P=0.158$  ) (  $23.88 \pm 77.86$  ) (mg/dl) .

على الرغم من أن هناك معنوية في مستوى الكوليسترول ومستوى الدهون الثلاثية بين مرضى السكري ومجموعة التحكم الا ان الاثنين في المعدل الطبيعي

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